

**COLORADO RIVER RECOVERY PROGRAM  
FY-2008 PROPOSED SCOPE OF WORK for:**

Project No.: 121a

Larval Razorback Sucker Reproduction—Gunnison and Upper Colorado rivers

Lead Agency: Fish and Wildlife Service  
Colorado River Fishery Project

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Date: April 30, 2007  
revised:

Category: \_\_\_\_\_

Expected Funding Source:

- |   |  |
|---|--|
| <input type="checkbox"/> Ongoing project                  | <input checked="" type="checkbox"/> Annual funds |
| <input type="checkbox"/> Ongoing-revised project          | <input type="checkbox"/> Capital funds           |
| <input checked="" type="checkbox"/> Requested new project | <input type="checkbox"/> Other (explain)         |
| <input type="checkbox"/> Unsolicited proposal             |  |

I. Title of Proposal: **Verification of Stocked Razorback Sucker Reproduction in the Gunnison and upper Colorado rivers via Annual Collections of Larvae.**

II. Relationship to RIPRAP:

Colorado River Action Plan: Gunnison River

IV.A.1.b.(2). Monitor and evaluate stocking results; make recommendations regarding further augmentation.

V.A.2. Identify additional spawning sites of endangered fishes on the Gunnison River.

III. Study Background/Rationale and Hypotheses:

Wild razorback suckers were last captured in the Gunnison River in the late 1970s (Holden et al. 1981), and in the Upper Colorado River in the late 1990's (from the Walter Walker Wildlife Area in 1998). Wild razorback sucker are virtually extirpated in these two river systems. Restoration stocking of razorback sucker began in April 1994 in the Gunnison River and has continued annually since that time (Burdick 2003). About 18,400 juvenile, sub-adult, and adult razorback sucker were stocked during 1994-2002. Restoration stocking began in the Upper Colorado River in 1999 and is ongoing.

To produce a self-sustaining population in a particular river system, stocked individuals need to 1) survive, 2) remain in the vicinity of release, or if displaced downstream, return upstream to spawn, 3) successfully spawn in either the Gunnison or Upper Colorado rivers, and 4) progeny need to survive to adulthood and be retained in or return to the Gunnison and Upper Colorado river so as to maintain an adult population there. Razorback sucker stocked in the Gunnison River near Delta, Colorado, have been recaptured subsequent to their release upstream from the Redlands Diversion Dam. Twenty of these domestic-reared razorback sucker were recaptured from 1997–2001 in the Gunnison River upstream from Redlands Dam that had been at large for more than six months post-stocking (Burdick 2003). Six of these fish were at large at least 18 months (17.9–50.2 months) following release. Five of these six were at least 300 mm when stocked. All six fish were >390 mm long when recaptured, and therefore presumably sexually mature. How many stocked razorback suckers have survived and remained in the Gunnison River is unknown, but those that have should be actively spawning if suitable spawning habitat exists.

Sampling for adult endangered fish was conducted in the Gunnison River in 2006, but few adult razorbacks were found. More sampling is planned for 2007. Intensive sampling for Colorado pikeminnow in the Colorado River during 2003–2005 turned up many adult razorback suckers. Larval razorback suckers were collected in both rivers during each year of sampling: Gunnison River: 2002, 8; 2003, 7; 2004, 2; 2005, 2. Colorado River: 2004, 2; 2005, 4. The 2006 samples are not yet complete, but four razorback larvae have been identified from the Colorado River samples so far. The final year of larval sampling is 2007 and is intended to complement the adult fish survey on the Gunnison River (Project 121-a) in 2007. In 2008, a final report will be prepared.

#### IV. Study Goals, Objectives, End Product:

##### Study Goals/Objectives

1. Provide continuity of verification of spawning by razorback sucker in the Gunnison River.
2. Provide continuity of verification of spawning by razorback sucker in the Upper Colorado River.

##### Objectives:

1. Collect samples of larvae from the Gunnison River and Upper Colorado River during and immediately after the suspected spawning season and determine if razorback sucker larvae are present among samples.

FINAL PRODUCT: Draft Final Report to coordinator: 5/1/2008  
Draft Report to peer reviewers/BC: 6/1/2008  
Revised Report for BC consideration: 7/15/2008

## V. Study Area

Backwater and flooded bottomland sites along the Gunnison River between Delta and immediately upstream from Redlands Diversion Dam (river miles 57–3), and the Colorado River from Westwater to Palisade (rm 128-185). If razorback larvae are discovered downstream of the Gunnison River confluence, we will not know if they originated from spawning sites in the Colorado River or the Gunnison River. However, larvae found in collections from the 15-mile reach (upstream of the Gunnison River confluence) would verify Colorado River spawning. To date, no razorback larvae have been collected from the 15-mile reach.

## VI. Study Methods/Approach

### Larval Sampling

This is a seven-year study with six years devoted to field work and the 7th year for analyses and writeup of the field data. The study began in 2002 and concludes in FY2008.

### General

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The primary method of sampling is seining quiescent river habitats (shorelines, backwaters and flooded bottomlands) with small-mesh seines (0.5 mm). Seine sampling, because of its more complete geographic coverage of the river, provides better larval distributional information than does light-trapping used in other parts of the upper basin where larval concentration areas are already known. Commencement of sampling will be determined by runoff conditions and temperatures during individual years. Muth et al. (1998) reported that razorback sucker larvae were first collected at sites in the Green River some 20–30 days after initiation of spawning, which coincided with the first significant increase in discharge from snow melt runoff. In 2002 through 2005, no fish larvae of any kind were found until mid-May. In 2006, a few fish larvae were collected on the first day of sampling (May 15) but in no year have razorback larvae been collected prior to May 20 (Osmundson 2006). Sampling occurs for about 8 weeks.

Each river study area is divided into 5-mile segments. Seine sampling occurs at 1-6 sites per 5-mile segment each week, depending on availability of low-velocity habitats. An investigator spends about five minutes at each site running a seine through the water. River-mile locations of sites are noted, as well as presence or absence of larvae. If larvae are found, they are preserved in individually labeled bottles of 100% ethanol. Samples are forwarded to the Larval Fish Laboratory for analysis.

VII. Task Description and Schedule

Description

- Task 1. Collect samples of larvae.  
Task 2. Analyze samples in the lab.  
Task 3. Write annual reports.  
Task 4. Analyze data and prepare final report.

Schedule

Tasks 1,2 & 3: 2002-2007  
Task 3 &4: 2008

VIII. FY-2008 Work (final year of multi-year study)

Deliverables/Due Dates

Annual Report Due 12/2008  
Draft Final Report to coordinator: 5/1/2008\*  
Draft Report to peer reviewers/BC: 6/1/2008\*  
Revised Report for BC consideration: 7/15/2008\*

\* dates are contingent upon prior completion of Larval Fish Lab analysis of 2007 samples.

Budget

Task 3 & 4. Analyze data, write annual report and final report

Labor (salary and benefits)

Project Biologist (1-GS-12 @ 2,025/wk)	8.5 weeks	\$ 17,213
Admin. Assistant (1-GS-9 @ 1,391/wk)	1 week	\$ 1,391
Project Leader (1-GS-14 @ 2,245/wk)	1 week	\$ 2,245
Subtotal		\$ 20,849

Printing and Distribution (e.g., GPO printing; postage  
& mailing of Final Report)

\$ 650

Grand Total **\$ 21,499**

IX. Budget Summary

Project Cost

FY-2008 FWS, \$21,499

X. Reviewers

Program Staff

XI. References

Burdick, B. D. 2003. Monitoring and evaluating various sizes of domestic-reared razorback sucker stocked in the Upper Colorado and Gunnison rivers: 1995–2001. Final Report prepared for the Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. Recovery Program Project Number 50. U. S. Fish and Wildlife Service, Colorado River Fishery Project, Grand Junction, Colorado. 54 pp + appendices.

Holden, P. B., C. Richard, L. W. Crist, and J. R. Campbell. 1981. Aquatic biology studies for proposed Colorado-Ute Electrical Association power plant near Grand Junction, Colorado. Final Report to Burns and McDonnell, Planning and Environmental Analysis Division. Report PR-56-1, BIOWEST, Inc., Logan, Utah.

Muth, R. T., G. B. Haines, S. M. Meisner, E. J. Wick, T. E. Chart, D. E. Snyder, and J. M. Bundy. 1998. Reproduction and early life history of razorback sucker in the Green River, Utah and Colorado, 1992–1996. Final Report of Colorado State University Larval Fish Laboratory to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado. 62 pp.

Osmundson, D. B. 2006. Verification of stocked razorback sucker reproduction in the Gunnison River via annual collections of larvae. Annual report prepared for the Recovery Implementation Program for the Endangered Fishes of the Upper Colorado River Basin. Recovery Program Project Number 121. U. S. Fish and Wildlife Service, Grand Junction, Colorado.

Prepared by DBO, 4/30/2007

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